DEPARTMENT OF HEALTH & HUMAN SERVICES

Memorandum

Date : October 30, 1998

From : Facility Principal Engineer, Health Facilities Program, DEH&E
Albuquerque Area Indian Health Service

Subject : FY 1998 Energy Report

To : Facilities Program Development
Attn.: Adam Scully, General Engineer
Indian Health Service Headquarters

Attached is the FY98 Energy Report for the Albuquerque Area Indian Health Service.

If you have any questions, please contact Marlene Hyde, Engineer Consultant, Health Facilities Program, Division of Environmental Health and Engineering at 505/248-4715.

Richie K. Grinnell, R.S.
for

Attachment

Indian Health Service
Albuquerque Area

FY 1998 Energy Report

October 27, 1998

Indian Health Service
FY 1998 Energy Report

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A. ANNUAL ENERGY MANAGEMENT DATA REPORT

In 1985, Albuquerque Area IHS reported a total consumption of 113,652 MMBtu at a rate of 214,715 Btu/GSF. By 1998, IHS facility engineers had modified operations and completed facilities improvement projects that reduced the rate to 167,734 Btu/GSF. This decrease represents a 28 percent reduction in our energy rate since 1985. Our goal of reducing our energy rate by 20 percent by the year 2000 has been more than met.

The decrease can be attributed to replacing energy-consuming systems with more efficient designs, expansion of building automation systems, replacement of inefficient lighting, and better operational procedures.

I. Energy Consumption and Cost Data

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1998
PREPARED BY:	Marlene Hyde, MSCE	TITLE:	Facilities Engr. Consultant
PHONE NUMBER:	(505) 248-4600	DATE SUBMITTED:	October 27, 1998

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Cost	Unit Cost ($)	Total MMBtu
Electricity	KWH	9,889,617	$799,853	0.081 /kwh	33,773
Fuel Oil	Thous. Gal.	0	0	0	0
Natural Gas	Thous.Cu.Ft.	38,442	$124,612	$3.24 / thous.CuFt	44,209
LPG/Propane	Thous. Gal.	296	$212,516	$719/ thous. gal	12,125
TOTALS	---	---	$1,136,981	---	90,107

Gross Square Feet	Btus/Gross Square Feet	$/Gross Square Feet
537,199	167,734	$2.12

Vehicles/Equipment

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)	Total Btu
Auto Gas	Thous. Gal.				

The Property Management Branch understands that they are no longer required to report vehicle consumption data.

II. Energy Conservation Program Summary

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1998
PREPARED BY:	Marlene Hyde	TITLE:	Facilities Engr. Consultant
PHONE NUMBER:	(505) 248-4600	DATE SUBMITTED:	October 27, 1998

DIRECT AGENCY EXPENDITURES

Direct expenditures on facility energy efficiency improvements

Annual Expenditures (Thous. $) Current Fiscal Year	$500,000 (at AIH)
Annual Expenditures (Thous. $) Next Fiscal Year	$800,000
Annual savings anticipated from expenditures	Unknown

ENERGY SAVINGS PERFORMANCE CONTRACTS

Number of ESP contracts awarded	None
Annual savings anticipated from ESP contracts	None

UTILITY INCENTIVES

Incentives received	None	(Thous. $)
Funds spent in order to receive incentives	None	(Thous. $)
Annual savings anticipated from DSM activities	None	MMBTU

TRAINING

Current year expenditures for energy management training	0 (Thous. $)
Number of personnel trained	0

SUMMARY OF ALTERNATIVE TRANSPORTATION FUEL USAGE

Vehicles (required by EPACT Sec. 308)

Number of dedicated alternative fuel vehicles	None	
Fuel consumed in dedicated AFVs	0	(Thous. GEG)
Number of dual-fuel alternative fuel vehicles	None	
Fuel consumed in dual-fuel AFVs	0	(Thous. GEG)

Fuel (required by EPACT Sec. 303)		Annual Consumption	Annual Cost (Thous. $)
Biodiesel	Thous. Gal.	None	
Electric	KWH	None	
Ethanol	Thous. GEG	None	
Hydrogen	Thous. GEG	None	
Liquified Pet.Gas (LPG)	Thous. GEG	None	
Methanol	Thous. GEG	None	
Natural Gas (CNG or LNG)	Thous. GEG	None	
Other	Thous. GEG	None	

B. ENERGY CONSUMPTION REDUCTION GOALS

The Albuquerque Area Indian Health Service (IHS) physical plant consists of over 100 buildings located both in urban areas and at some of the most remote areas of New Mexico. In Fiscal Year 1998 the Albuquerque Area IHS spent $1,136,981 on energy for its facilities.

The IHS annual energy consumption goals are consistent with the Energy Policy Act of 1992 and Executive Order 12902. Our goals are to reduce energy consumption 20 percent by year 2000, and 30 percent by year 2005. These reduction goals are based on 1985 energy consumption data. In 1985, the Albuquerque Area spent $965,071 for 113,652 million Btus of energy, covering 529,316 square feet. In FY 1998, this was reduced to 90,107 million Btus for owned and leased facilities covering 537,199 square feet at a cost of $1,136,981. This represents a 28% reduction in energy usage on a square foot basis.

C. ENERGY SAVINGS PERFORMANCE CONTRACTS

The Albuquerque Area has not entered into any performance contracts, nor does it have any plans in the immediate future to do so.

D. ENERGY EFFICIENCY AND WATER CONSERVATION PROJECT FUNDING

Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects. For example, the Albuquerque Indian Hospital has been undergoing extensive renovation during the past 3 years, with major energy savings expected from the elimination of the large central boilers and chiller. These were replaced by a thermal ground source heat pump loop system, with constant-temperature water being pumped out of the ground and circulated through the heat pumps. Other projects such as replacing lighting with more efficient T-8 lamps and electronic ballasts are also funded out of M&I funds.

E. ENERGY AND WATER SURVEYS AND AUDITS

Both NECPA and EO 12902 require Federal agencies to perform energy and water surveys and audits. EO 12902 details the requirement by specifying prioritization surveys and comprehensive facility audits and by mandating all facilities to be audited within ten years. In the Albuquerque Area, energy audits were completed on all the hospitals, except the Albuquerque facility which is undergoing extensive renovation. Energy Audit Reports were completed in 1997 for Acoma-Canoncito-Laguna, Zuni, Mescalero, and Santa Fe Indian Hospitals.

I. Prioritization Survey

Prioritization Surveys were not necessary, since 4 out of the 5 area hospitals were audited last year. The fifth hospital (Albuquerque Service Unit) is under major renovation and being converted to a very energy-efficient HVAC system, so no audit is planned at ASU.

II. Comprehensive Facility Audit

Comprehensive Facility Audits were completed for 4 out of the 5 major facilities in the Albuquerque Area. Following is a summary of the recommendations from these audits:

INSTALLATION NAME	DATE OF AUDIT	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY
Acoma-Canoncito-Laguna Hospital	Jan. 1997	Retrofit fluorescent and incandescent lighting; install an Energy Management System for Central Plant and for AHUs; connect steam sterilizers to existing boiler; replace existing chillers with high-efficiency screw chillers; replace solar, domestic hot water, and condenser water shell and tube heat exchangers with flat plate; convert AHU to VAV; install premium efficiency motors; reduce water flow.
Mescalero Hospital	March 1997	Retrofit lighting; install energy management system; replace existing boilers; replace shell and tube heat exchangers with flat plate heat exchangers; convert AHUs to VAV; install premium efficiency motors; reduce water flow.
Santa Fe Indian Hospital	Jan. 1997	Retrofit lighting; install energy management system; remove steam sterilizer and install new high-efficiency boiler; replace heat pump chiller with screw chiller; replace shell and tube heat exchangers with flat plate; convert AHUs to VAV; install premium efficiency motors; install new cooling tower fan VSD; install 2-way control valves; reduce water flow.
Zuni Hospital	Feb. 1997	Retrofit lighting; install energy management system for central plant and AHUs; remove steam sterilizers/connect to new small boiler; replace 2 existing boilers with 3 new boilers; replace shell and tube heat exchangers with flat plate heat exchangers; install control valves on AHUs steam coils; convert AHUs to VAV; install high-

		efficiency motors; reduce water flow.

The Albuquerque Area does not plan any additional energy audits. The Area plans to implement justifiable Energy Conservation Measures as funding becomes available. A summary of the Albuquerque Area comprehensive facility audit is provided in the following tables.

1. Number of Locations: **5**
2. Energy Audits within last 3 years: **4**
3. % of all facilities with Energy Audits: **80%**
4. Number of New Facilities* designed to Energy Standards (within the last 3 years): **1**
5. Total Percentage of Facilities with recent audits and/or new facilities designed to standards: **100%**

*ASU's mechanical and electrical systems are being completely renovated, so it's included as a ▒New Facility▒ in this report.

III. Leased Facilities

Leased facilities in the Albuquerque Area are typically small Health Clinics and Health Stations at the various pueblos. They are typically part of existing buildings which are used for a variety of functions besides health care. When any of these facilities are replaced, more energy-efficient designs are incorporated into the new facilities. Some of the Area's facilities are being converted to 638 and new facilities are constructed, such as the Pinehill-Ramah (currently under construction) and Alamo Health Centers.

F. IMPLEMENTATION OF ENERGY EFFICIENCY AND WATER CONSERVATION PROJECTS

The major implementation of energy-related projects this year in the Albuquerque Area has been the renovation of the Albuquerque Indian Hospital. Phase 3A of the construction was completed in April 1998 which involved finishing the 4th floor for inpatient. The boilers and chillers were taken off-line in 1997 and part of the hospital is now being served by the ground-source thermal water closed loop system, with both individual and roof-top heat pumps for heating and cooling. This system now serves the north wing of the 2nd and 3rd floors and all of the 4th floor and the Outpatient Department. The east and west wings will be converted to heat pumps as part of Phase 4 and 5 construction. Natural gas usage dropped from 61,355 CCF in FY97 to 47,381 in FY98, however KWH usage increased 73% to 956,000 KWH in FY98.

G. SOLAR AND OTHER RENEWABLE ENERGY

Several projects were planned, under construction, or completed in FY 1998 that involved active solar technologies. Both the Santa Fe and the A-C-L Hospitals use solar technologies; efforts are being made to improve their efficiency of operation. Design has been completed at A-C-L and construction is starting for a solar overtemperature protection system to prevent a dangerous potential over-heating situation. M&I funds are being used to implement this project, which is expected to cost about $200,000, including design fees. During January 1998, one of the underground solar water storage tanks was removed due to corrosion and lead paint, and was not replaced due to cost. This led to the solar radiator project.

A grant was received in late FY98 from the National Renewable Energy Lab (NREL) in Golden, Colorado to install 4 solar lights at the Quarters at A-C-L Hospital. NREL also recently awarded a grant to the Santa Fe Indian Hospital to refurbish its 20-year old solar system to make it operational once again.

H. MINIMIZATION OF PETROLEUM-BASED FUEL USE

Projects to minimize petroleum-based fuel use have not been implemented in the Albuquerque Area IHS. No additional projects have been identified in any of the energy conservation audits.

I. ENERGY EFFICIENT OPERATIONS AND MAINTENANCE PROCEDURES

The maintenance staffs at all the Albuquerque Area hospitals conduct their operations in the most energy-efficient manner possible and are always striving to improve their operations. A major goal at all the hospitals is to replace the existing pneumatic controls with new direct digital controllers and user-programmable, computer-based energy management systems (EMS). These will provide chiller and boiler optimization, variable speed drive controls, optimal equipment start/stop and precise temperature controls. This kind of system is being installed as part of the ASU renovation. The cost estimates for the remaining hospitals are:

ACL	$104,600
Mescalero	$ 94,572
Santa Fe	$330,000
Zuni	$ 87,900

J. ENERGY EFFICIENCY IN NEW SPACE

The Code of Federal Regulations (CFR)436 and 435 (or state codes, whichever are more stringent), are used to ensure that designs of new buildings incorporate life-cycle cost methodologies. This applies to renovation of existing spaces. The Albuquerque Indian Hospital renovation project has been designed to be much more energy-efficient than the original facility.

K. PERFORMANCE EVALUATIONS

Position descriptions and performance evaluations of facility managers, designers, energy managers, their superiors, and others critical to the implementation of EO 12902 do not specifically address energy efficiency, water conservation, and solar and other renewable energy projects. However, such actions are included in performance evaluations since they are normal to the positions.

L. INCENTIVE AWARDS

Except for awards and recognition from immediate supervisors, there are no incentive programs to reward exceptional performance in implementing the provisions of NECPA and EO 12902.

M. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS

Procurement of energy efficient products is a normal part of business. All personnel recommending and specifying products for procurement consider energy efficiency and cost savings in product selection.

N. ENERGY MANAGEMENT TRAINING

The Albuquerque Area is no longer conducting energy management training for the Service Unit facility engineers and managers. It is up to each Service Unit to identify their own training needs and attend the appropriate courses offered through commercial vendors.

O. ENVIRONMENTAL BENEFITS OF ENERGY MANAGEMENT ACTIVITIES

Reduced energy usage will result in less demand for fossil fuels and will ensure a cleaner environment.

EXHIBIT 1
ENERGY CONSUMPTION AND COST DATA
TOTAL AREA IHS OWNED

IHS AREA:	Albuquerque	REPORTING FY:	FY 1998
PREPARED BY:	Marlene Hyde	TITLE:	Facil.Engr.Consultant
PHONE NUMBER:	(505) 248-4600	DATE SUBMITTED:	Oct.27, 1998

Energy Type	Reporting Units	Annual Consumption	Annual Cost(1000$)	Unit Cost ($)	Total Btu
Electricity	kWh	9,889,617	$800	$.081 /kWh	33,773 mmBtu
Fuel Oil	Gal/1000	0	0	/Gal	0
Natural Gas	ft^3/1000	38,442	$125	$3.24/ 1000$ft^3$	44,209 mmBtu
LPG	1000 Gals	296	$213	$0.72/ Gal	12,125 mmBtu
Purchased Steam	MMBtu	0	0	/MMBtu	0
Other	MMBtu	0	0	/MMBTu	0
TOTALS			$1,137		90,107 mmBtu

Gross Square Feet	Btu/Gross Square Feet	$/Gross Square Feet
537,199	167,734 Btu/GSF	$2.12

Conversion Factors:

Electric:	(kWh) (3415 BTU/kWh)	= BTU's
Fuel Oil:	(Gal) (140,00 BTU/Gal)	= BTU's
Natural Gas:	(ft^3) (1150 BTU/ft^3)	= BTU's
LPG/Propane:	(Gal) (41,000 BTU/Gal)	= BTU's

CONCURRENCE:

Area Facilities Engineer

Date 10/30/98

by Area Associate Director, OEHE

Date _____

EXHIBIT 2
ENERGY CONSERVATION PROGRAM SUMMARY

IHS Area	Albuquerque	FY	1998
Preparer	Marlene Hyde	Phone	(505) 248-4600
Title	Facilities Engr. Consultant	Date of Report	10/27/98

DIRECT AGENCY EXPENDITURES

1	Direct expenditures on facility energy efficiency improvements Annual Expenditures (Thous. $)	Current FY	~$500,000
		Next FY	$800,000
	Annual Savings Anticipated from Expenditures	MMBTU	Unknown*
		(Thous.$)	Unknown*
2	Number of Energy Savings Performance Contracts (ESPCs) Awarded		0
	Annual Savings Anticipated from ESPCs	MMBTU	0
		(Thous.$)	0
3	Utility Incentives Received	(Thous.$)	0
	Funds Spent in Order to Receive Incentives	(Thous.$)	0
4	Annual savings anticipated from DSM activities	MMBTU	0
		(Thous.$)	0
5	Current year expenditure for energy management training	(Thous.$)	0
	Number of personnel trained		0

*Unknown savings since projects at AIH and Santa Fe are not fully implemented and Zuni's hasn't been designed.

CONCURRENCE:

Area Facilities Engineer

Date 10/30/98

for Area Associate Director, OEHE

Date 10/30/98